SPEC ACCEL™ OMP Result

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Supermicro
(Test Sponsor: NVIDIA Corporation)

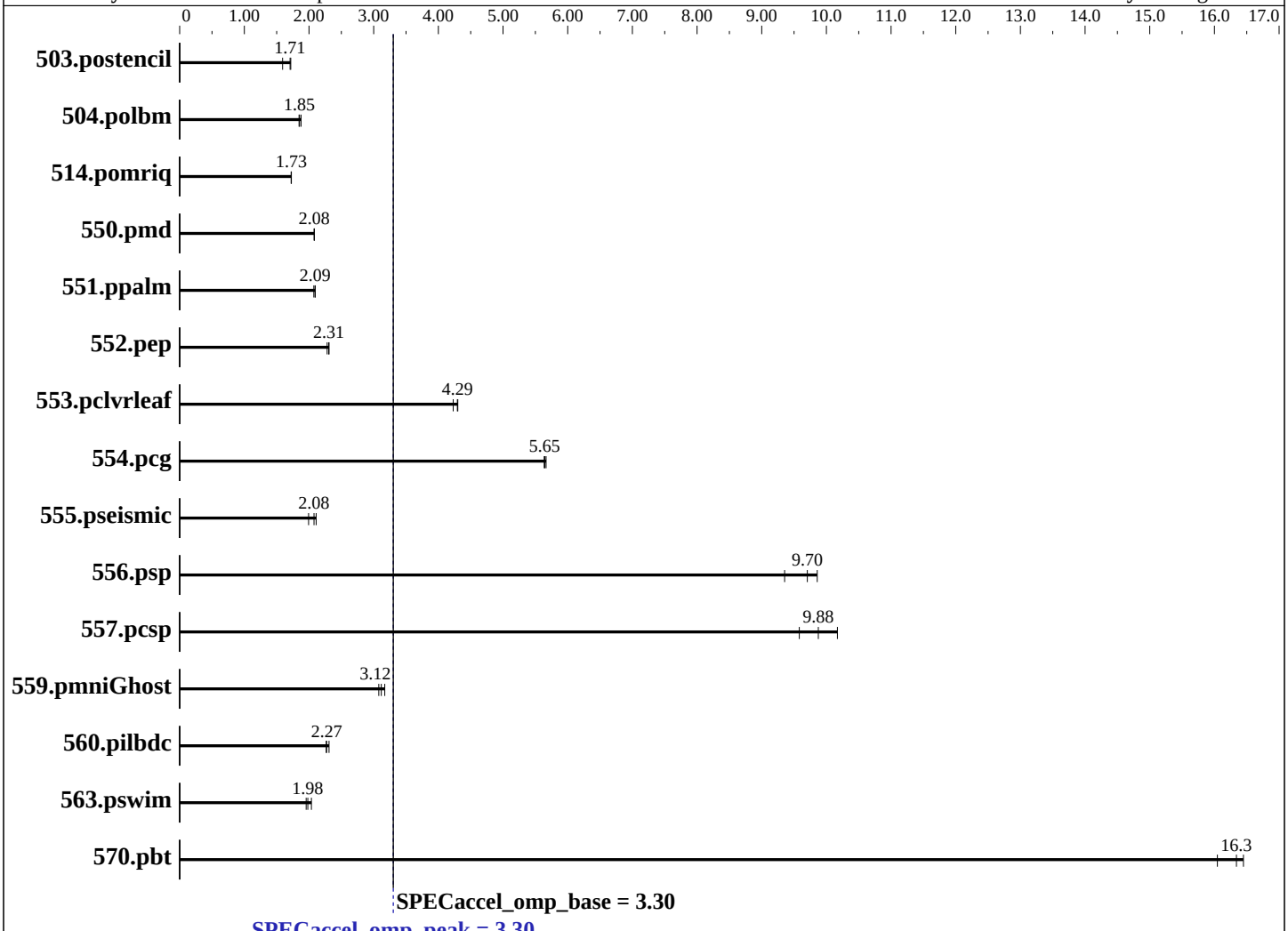
Xeon E5-2698 v4
SuperServer 1028GR-TR

SPECaccel_omp_peak = 3.30

SPECaccel_omp_base = 3.30

ACCEL license: 019
Test sponsor: NVIDIA Corporation
Tested by: NVIDIA Corporation

Test date: Jul-2018
Hardware Availability: Jul-2017
Software Availability: Aug-2018



Hardware

CPU Name:	Intel Xeon E5-2698 v4
CPU Characteristics:	
CPU MHz:	2200
CPU MHz Maximum:	3600
FPU:	Integrated
CPU(s) enabled:	40 cores, 2 chips, 20 cores/chip, 2 threads/core
CPU(s) orderable:	1,2 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	50 MB I+D on chip per chip
Other Cache:	None

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Accelerator

Accel Model Name:	Intel Xeon CPU E5-2698 v4
Accel Vendor:	Intel Corporation
Accel Name:	Xeon E5-2698 v4
Type of Accel:	CPU
Accel Connection:	Not Applicable
Does Accel Use ECC:	Yes
Accel Description:	Intel Xeon CPU E5-2698 v4
Accel Driver:	Not applicable

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Hardware (Continued)

Memory: 256 GB (8 x 32 GB 2Rx4 PC4-2400T-R)
Disk Subsystem: 480GB Intel SSD DC S3520
Other Hardware: None

Software

Operating System: CentOS Linux release 7.4.1708 (Core)
3.10.0-693.11.6.el7.x86_64
Compiler: PGI Professional Edition, Release 18.7 LLVM
File System: xfs
System State: Run level 3 (multi-user)
Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.postencil	68.5	1.59	63.5	1.72	**63.9**	**1.71**	68.5	1.59	63.5	1.72	**63.9**	**1.71**
504.polbm	**65.8**	**1.85**	65.0	1.88	66.1	1.85	**65.8**	**1.85**	65.0	1.88	66.1	1.85
514.pomriq	360	1.72	360	1.73	**360**	**1.73**	360	1.72	360	1.73	**360**	**1.73**
550.pmd	116	2.08	116	2.08	**116**	**2.08**	116	2.08	116	2.08	**116**	**2.08**
551.ppalm	262	2.07	260	2.10	**260**	**2.09**	262	2.07	260	2.10	**260**	**2.09**
552.pep	101	2.28	100	2.31	**100**	**2.31**	101	2.28	100	2.31	**100**	**2.31**
553.pclvrleaf	271	4.23	266	4.30	**267**	**4.29**	271	4.23	266	4.30	**267**	**4.29**
554.pcg	59.1	5.64	**59.0**	**5.65**	58.8	5.67	59.1	5.64	**59.0**	**5.65**	58.8	5.67
555.pseismic	141	1.99	134	2.11	**136**	**2.08**	141	1.99	134	2.11	**136**	**2.08**
556.psp	**84.3**	**9.70**	87.4	9.35	83.0	9.86	**84.3**	**9.70**	87.4	9.35	83.0	9.86
557.pcsp	84.5	10.2	**87.0**	**9.88**	89.7	9.58	84.5	10.2	**87.0**	**9.88**	89.7	9.58
559.pmniGhost	129	3.08	**127**	**3.12**	125	3.17	129	3.08	**127**	**3.12**	125	3.17
560.pilbdc	283	2.31	288	2.27	**287**	**2.27**	283	2.31	288	2.27	**287**	**2.27**
563.pswim	78.1	2.04	81.3	1.96	**80.2**	**1.98**	78.1	2.04	81.3	1.96	**80.2**	**1.98**
570.pbt	47.4	16.4	**47.7**	**16.3**	48.6	16.0	47.4	16.4	**47.7**	**16.3**	48.6	16.0

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Platform Notes

```
Sysinfo program /local/home/aglobus/spec-accel2017/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35
running on perf-bdw3 Thu Jul 26 20:20:03 2018

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
  http://www.spec.org/accel/Docs/config.html#sysinfo
```

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Platform Notes (Continued)

```
From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2698 v4 @ 2.20GHz
      2 "physical id"s (chips)
      80 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
      cpu cores : 20
      siblings  : 40
      physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
      physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
   cache size : 51200 KB

From /proc/meminfo
   MemTotal:       264034224 kB
   HugePages_Total:      20
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   CentOS Linux release 7.4.1708 (Core)

From /etc/*release* /etc/*version*
   centos-release: CentOS Linux release 7.4.1708 (Core)
   centos-release-upstream: Derived from Red Hat Enterprise Linux 7.4 (Source)
   os-release:
      NAME="CentOS Linux"
      VERSION="7 (Core)"
      ID="centos"
      ID_LIKE="rhel fedora"
      VERSION_ID="7"
      PRETTY_NAME="CentOS Linux 7 (Core)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:centos:centos:7"
   redhat-release: CentOS Linux release 7.4.1708 (Core)
   system-release: CentOS Linux release 7.4.1708 (Core)
   system-release-cpe: cpe:/o:centos:centos:7

uname -a:
   Linux perf-bdw3 3.10.0-693.11.6.el7.x86_64 #1 SMP Thu Jan 4 01:06:37 UTC 2018
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jun 21 06:36

SPEC is set to: /local/home/aglobus/spec-accel2017
   Filesystem                   Type  Size  Used Avail Use% Mounted on
   /dev/mapper/centos_bdw3-root xfs   443G   58G  386G  13% /
Additional information from dmidecode:
```

Continued on next page

Platform Notes (Continued)

```
    Warning: Use caution when you interpret this section. The 'dmidecode' program
    reads system data which is "intended to allow hardware to be accurately
    determined", but the intent may not be met, as there are frequent changes to
    hardware, firmware, and the "DMTF SMBIOS" standard.


  (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
ACC_NUM_CORES = "80"
HUGETLB_PATH = "/mnt/hugetlb"
KMP_AFFINITY = "granularity=fine,compact,1,0"
OMP_PLACES = "{0},{1},{2},{3},{4},{5},{6},{7},{8},{9},{10},{11},{12},{13},{14},{15},{16},{17},
    {18},{19},{20},{21},{22},{23},{24},{25},{26},{27},{28},{29},{30},{31},{32},{33},{34},{35},
    {36},{37},{38},{39},{40},{41},{42},{43},{44},{45},{46},{47},{48},{49},{50},{51},{52},{53},
    {54},{55},{56},{57},{58},{59},{60},{61},{62},{63},{64},{65},{66},{67},{68},{69},{70},{71},
    {72},{73},{74},{75},{76},{77},{78},{79}"
OMP_PROC_BIND = "true"

551.ppalm (base): "advec_ws_private" src.alt was used.

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.
```

Base Compiler Invocation

C benchmarks:
pgcc

Fortran benchmarks:
pgfortran

Benchmarks using both Fortran and C:
pgcc pgfortran

Base Portability Flags

503.postencil: -DSPEC_USE_INNER_SIMD
504.polbm: -DSPEC_USE_INNER_SIMD
514.pomriq: -DSPEC_USE_INNER_SIMD
550.pmd: -DSPEC_USE_INNER_SIMD
551.ppalm: -DSPEC_USE_INNER_SIMD
552.pep: -DSPEC_USE_INNER_SIMD
553.pclvrleaf: -DSPEC_USE_INNER_SIMD
554.pcg: -DSPEC_USE_INNER_SIMD
555.pseismic: -DSPEC_USE_INNER_SIMD
556.psp: -DSPEC_USE_INNER_SIMD
557.pcsp: -DSPEC_USE_INNER_SIMD
559.pmniGhost: -DSPEC_USE_INNER_SIMD
560.pilbdc: -DSPEC_USE_INNER_SIMD
563.pswim: -DSPEC_USE_INNER_SIMD
570.pbt: -DSPEC_USE_INNER_SIMD

Base Optimization Flags

C benchmarks:
-V18.7 -Mllvm -fast -mp -Mnouniform -Mhugetlb

Fortran benchmarks:
-V18.7 -Mllvm -fast -mp -Mnouniform -Mhugetlb

Benchmarks using both Fortran and C:

553.pclvrleaf: -V18.7 -Mllvm -fast -mp -Mnouniform -Mhugetlb

559.pmniGhost: -V18.7 -Mllvm -fast -mp -Mnouniform -Mhugetlb -Mnomain

Peak Optimization Flags

C benchmarks:

503.postencil: basepeak = yes

504.polbm: basepeak = yes

514.pomriq: basepeak = yes

552.pep: basepeak = yes

554.pcg: basepeak = yes

Continued on next page

Peak Optimization Flags (Continued)

557.pcsp: `basepeak = yes`

570.pbt: `basepeak = yes`

Fortran benchmarks:

550.pmd: `basepeak = yes`

551.ppalm: `basepeak = yes`

555.pseismic: `basepeak = yes`

556.psp: `basepeak = yes`

560.pilbdc: `basepeak = yes`

563.pswim: `basepeak = yes`

Benchmarks using both Fortran and C:

553.pclvrleaf: `basepeak = yes`

559.pmniGhost: `basepeak = yes`

The flags files that were used to format this result can be browsed at
`https://www.spec.org/accel/flags/PGI-Platform-Multicore-OMP.html`
`https://www.spec.org/accel/flags/pgi2018_flags.html`

You can also download the XML flags sources by saving the following links:
`https://www.spec.org/accel/flags/PGI-Platform-Multicore-OMP.xml`
`https://www.spec.org/accel/flags/pgi2018_flags.xml`

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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